

Floodplain Management in Michigan

June 6, 2024

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Presentation Overview

- Introduction to floodplains & resource programs
- 5 Essential Components to Floodplain Management:
 1. Identify Floodplains
 2. Federal Emergency Management Agency (FEMA)
 3. State of Michigan floodplain regulatory programs
 4. Michigan Building Codes
 5. Apply above knowledge gained to survey data



The NREPA

In 1994, the Michigan legislature combined the state's environmental laws into one act, the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. (The NREPA)

Most natural resource and environmental protection laws are part of the NREPA.

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) oversee these statutes



Mason County Flooding, June 2008
Photo by Raymond Holt, Michigan State Police

Water Resource Division

Joint Permit Application (JPA)

- **Floodplain Regulatory Authority found in Part 31, Water Resources Protection**
- **Inland Lakes and Streams, Part 301**
- **Wetland Protection, Part 303**
- Dam Safety, Part 315
- Inland Lake Levels, Part 307
- Sand Dune Protection and Management, Part 353
- Shorelands Protection and Management, Part 323
- Great Lakes Submerged Lands, Part 325



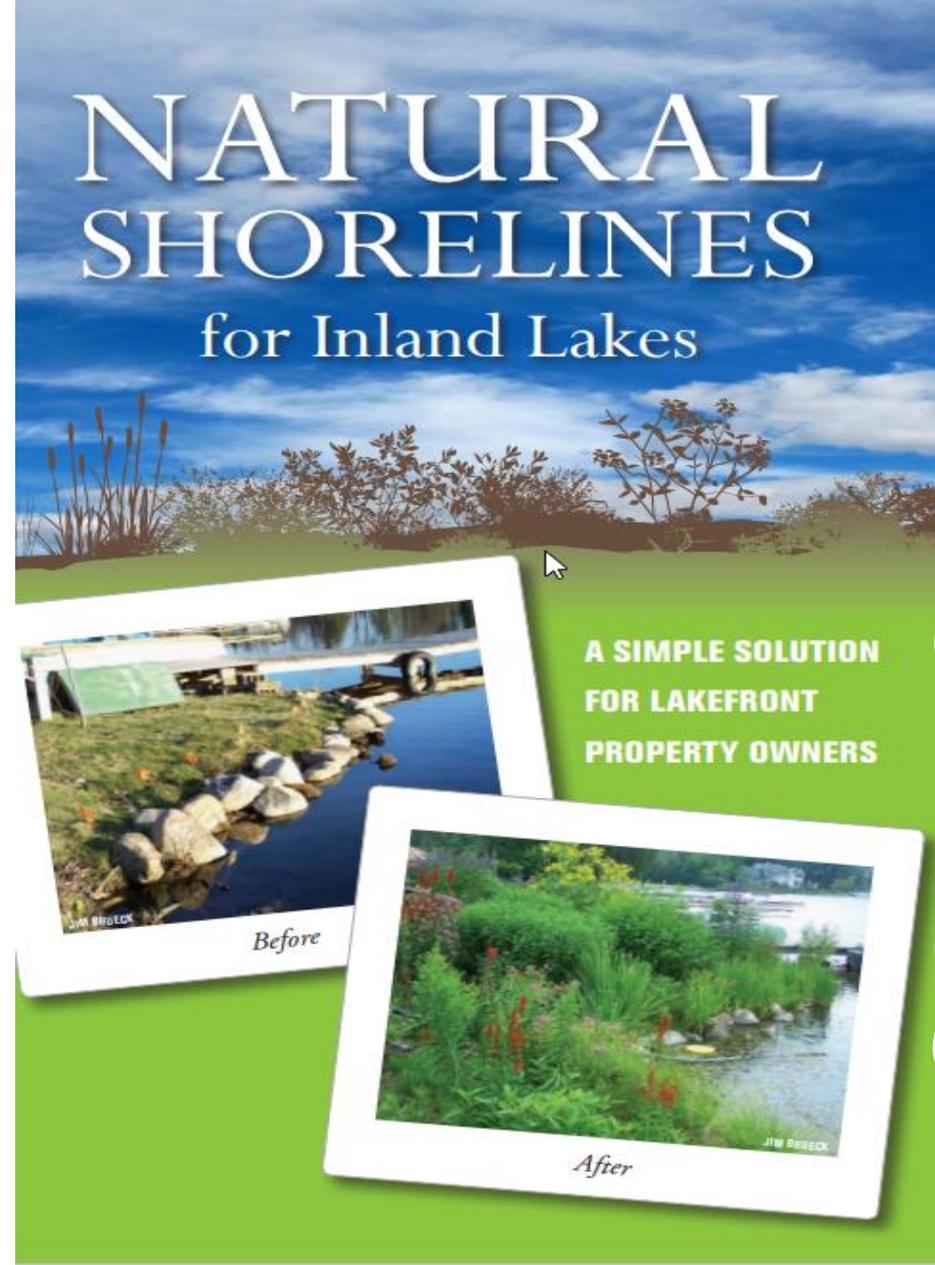


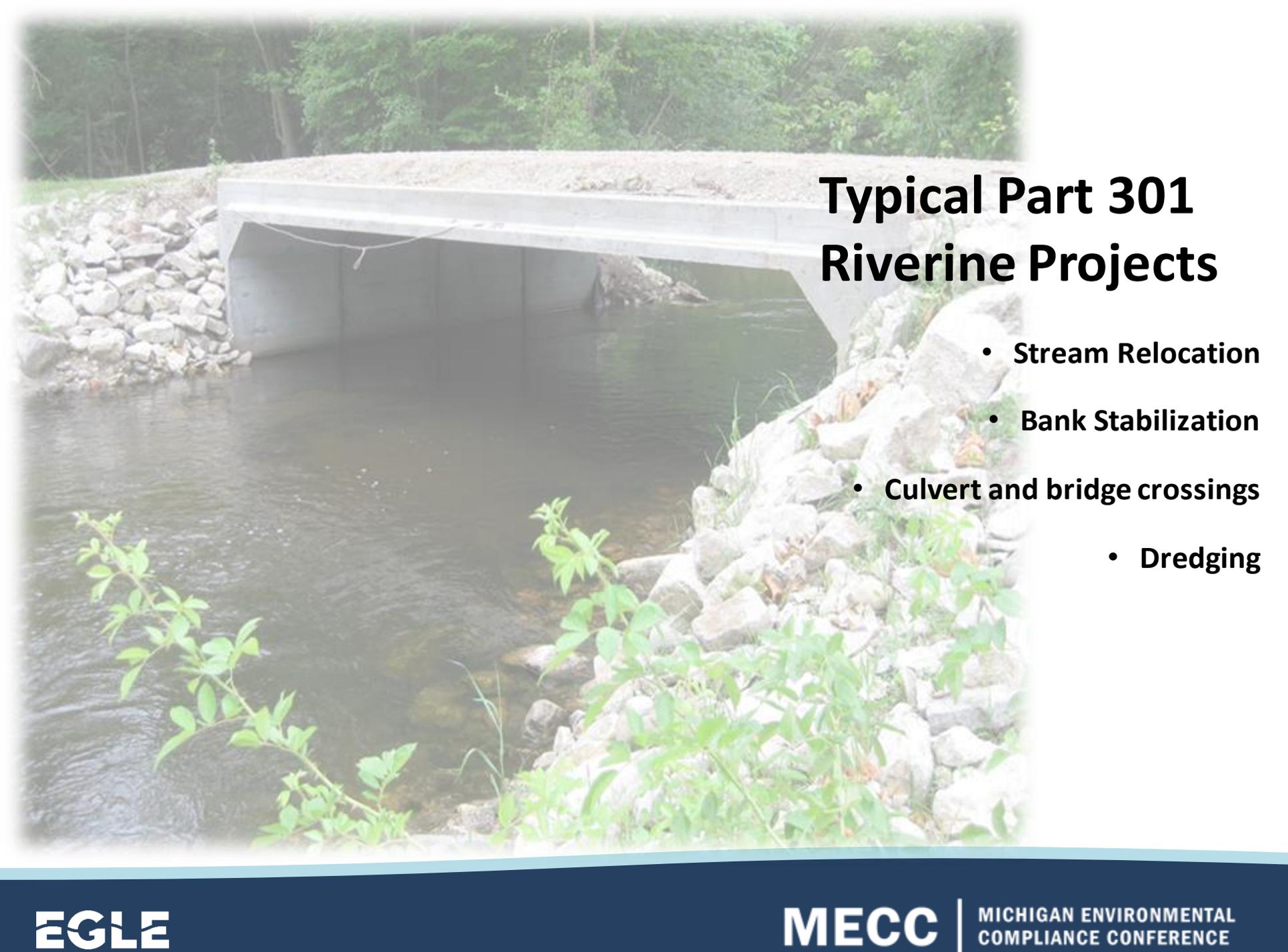
Part 301, Inland Lakes and Streams

Projects below the Ordinary High Water Mark of a river, or lake may require a permit

Lakefront Projects under Part 301

- Shoreline Protection
 - Riprap
 - Seawall
 - Bioengineering
- Permanent Docks
- Beach Sanding
- Boatwells
- Dredge





Typical Part 301 Riverine Projects

- Stream Relocation
- Bank Stabilization
- Culvert and bridge crossings
- Dredging



Michigan is one of only 3 states authorized by EPA to administer the federal wetlands program (Michigan, New Jersey, & Florida)

Part 303, Wetlands Protection

Permit required for any filling, dredging, construction, maintain the use of, and/or draining of surface waters.

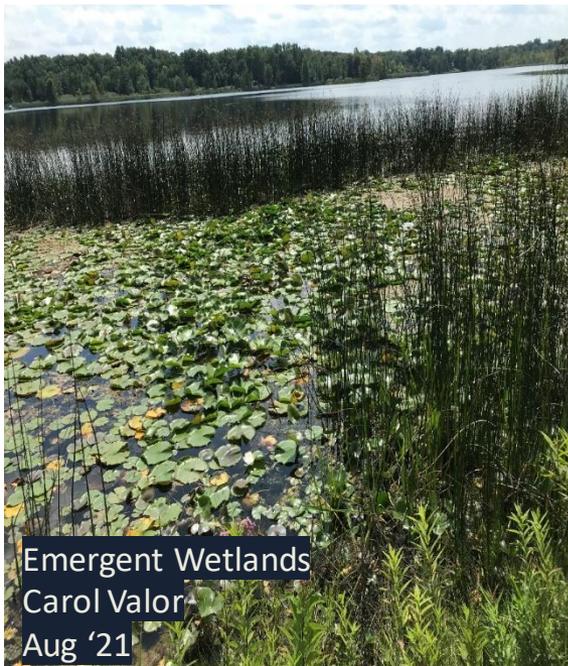
What makes an area wetland?

Part 303 defines a wetland as “Land characterized by the presence of water at a frequency and duration sufficient to support wetland vegetation or aquatic life”

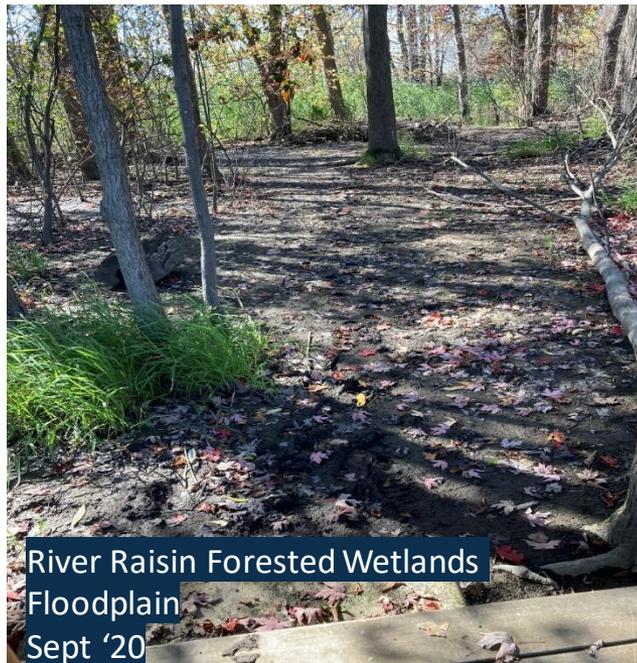
Regulated if:

- Located within 500 feet of a waterbody
- Contiguous to waterbody
- More than 5 acres in size





Emergent Wetlands
Carol Valor
Aug '21



River Raisin Forested Wetlands
Floodplain
Sept '20



Huron River floodplain, Aug '07
Wet Meadow, or Wet Mesic Prairie
Keto Gyekis, kgNaturePhotography.com

Wetland Types

Wetlands can appear dry with a high ground water table

Wetlands Map Viewer: www.mcgi.state.mi.us

EGLE Wetlands Identification Program: www.Michigan.gov/wetlands

Part 31 Floodplain Permits

Floodplain Regulatory Authority found in Part 31, Water Resources Protection, of NREPA, as amended, regulates:

Any Occupation,

Construction,

Filling, or grade changes within the floodplain of a river or stream that has a drainage area of **2 square miles, or greater**



Marquette County May 2003
Flooding

The Basics- What is a floodplain?

The **floodway** is the river channel and the portions of the floodplain that carry and discharge the flood

Higher velocity area
Moving water

The 100-year **floodplain** is the land adjacent to a river, lake or stream that will be inundated by water during a flood which has a 1% chance of occurring in any given year.

Every river, lake or stream has a floodplain associated with it.



Floodway

Floodway Fringe

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FEMA Floodplain Maps #1 Go-To Resource!

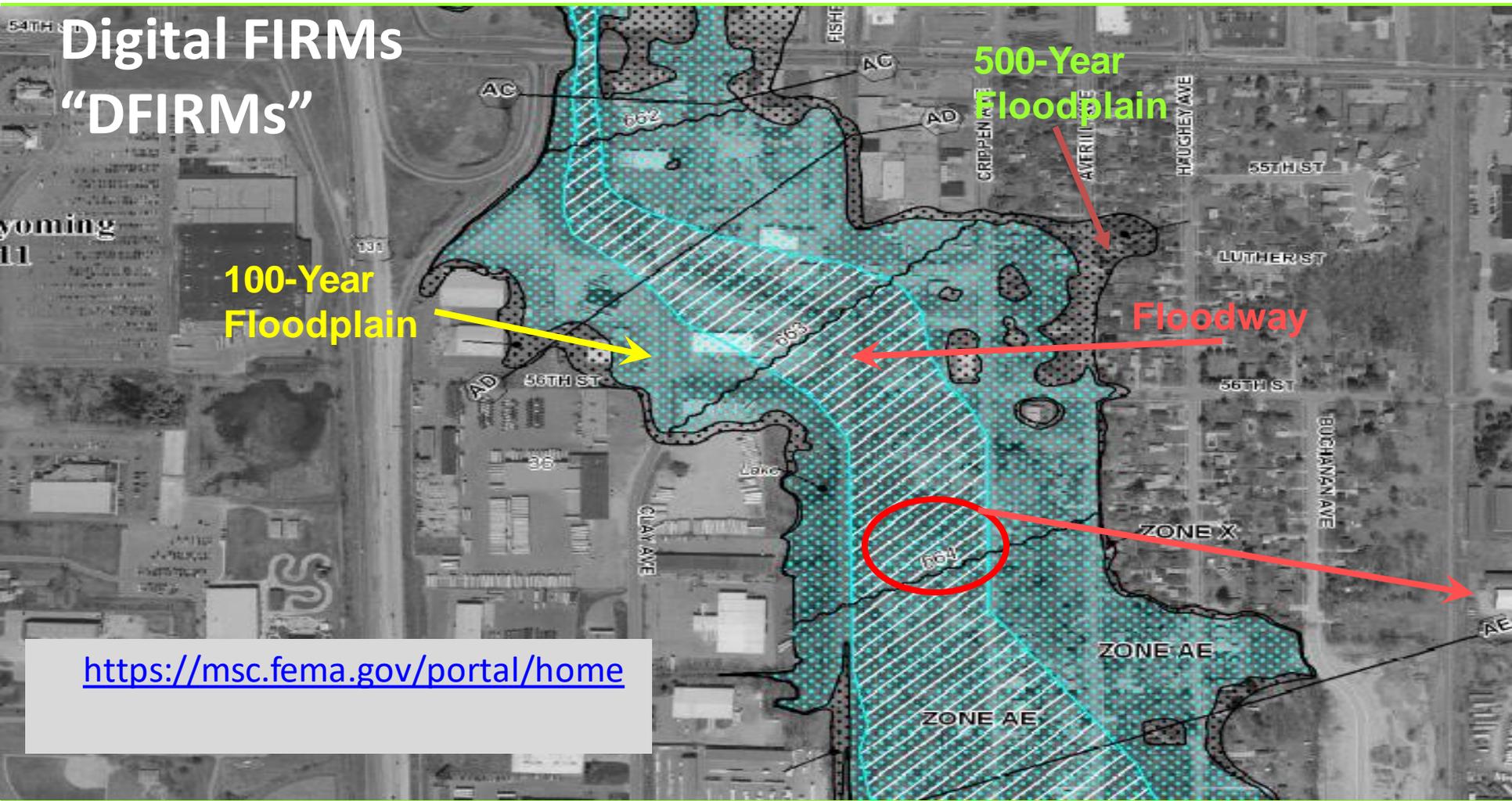
Digital FIRMs
“DFIRMs”

100-Year
Floodplain

500-Year
Floodplain

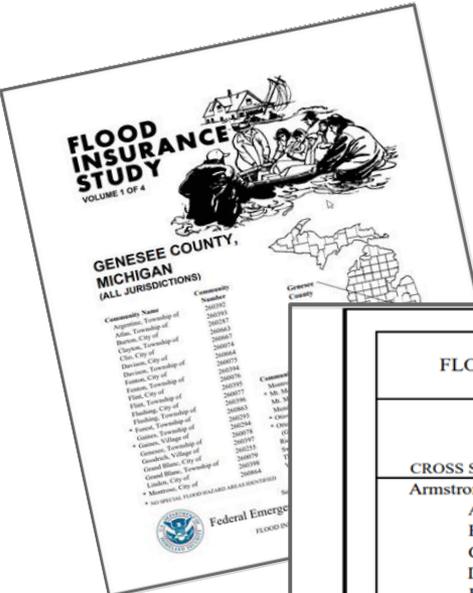
Floodway

<https://msc.fema.gov/portal/home>



FEMA Flood Insurance Study

<https://msc.fema.gov/portal/home>



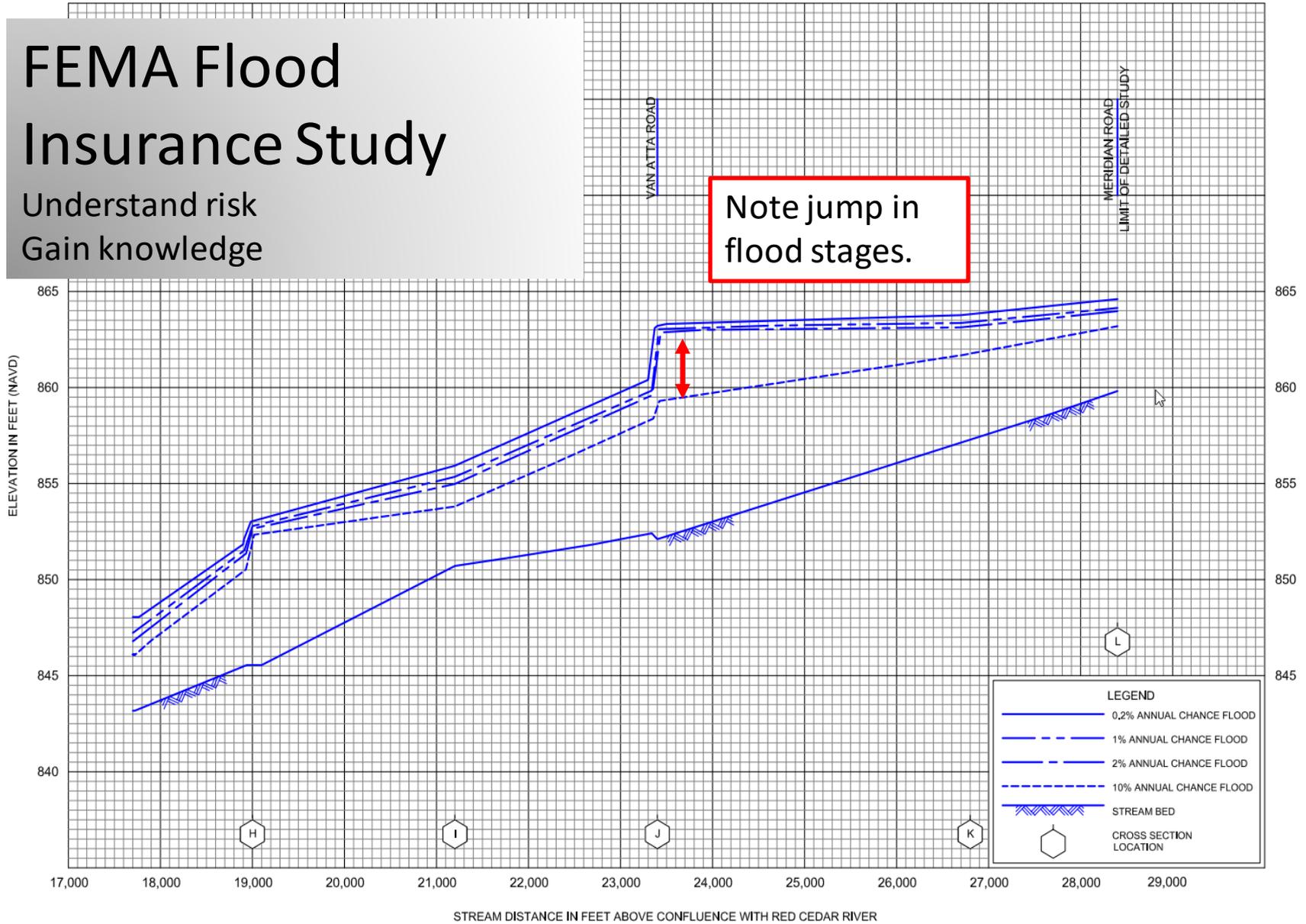
FLOODING SOURCE		FLOODWAY				1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY (FEET)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Armstrong Creek									
A	0	450	1,480	3.1		625.5	625.5	625.5	0.0
B	528	363	1,105	3.5		625.8	625.8	625.8	0.0
C	950	376	1,047	4.9		626.2	626.2	626.2	0.0
D	1,320	377	966	4.8		626.9	626.9	626.9	0.0
E	2,482	250	786	5.1		631.0	631.0	631.0	0.0
F	3,221	228	538	5.9		632.6	632.6	632.6	0.0
G	3,696	309	723	5.1		634.1	634.1	634.1	0.0
H	4,752	335	1,024	3.9		636.3	636.3	636.3	0.0
I	5,914	169	490	7.3		638.5	638.5	638.5	0.0
J	6,811	24	152	13.2		640.7	640.7	640.7	0.0
K	6,864	47	369	7.7		642.9	642.9	642.9	0.0
L	8,078	330	966	4.6		644.2	644.2	644.2	0.0
M	8,554	393	1,478	3.0		644.9	644.9	644.9	0.0
N	9,187	331	854	5.3		645.5	645.5	645.5	0.0
O	10,032	273	677	6.2		647.7	647.7	647.7	0.0
P	10,454	415	883	6.0		648.8	648.8	648.8	0.0
Q	10,771	476	974	4.6		649.6	649.6	649.6	0.0
R	11,722	632	814	4.9		651.3	651.3	651.3	0.0
S	12,250	418	704	5.6		652.5	652.5	652.5	0.0
T	13,622	360	946	3.4		655.6	655.6	655.6	0.0
U	15,101	426	1,050	4.1		657.6	657.6	657.6	0.0
V	15,998	354	730	6.3		659.6	659.6	659.6	0.0
W	16,262	450	870	5.6		660.3	660.3	660.3	0.0
X	17,266	107	378	7.8		662.3	662.3	662.3	0.0
Y	17,424	57	321	7.7		664.0	664.0	664.0	0.0

¹Feet above confluence with Flint River

TABLE 13	FEDERAL EMERGENCY MANAGEMENT AGENCY	FLOODWAY DATA
	GENESEE COUNTY, MI (ALL JURISDICTIONS)	ARMSTRONG CREEK

FEMA Flood Insurance Study

Understand risk
Gain knowledge



Identifying Floodplains in Unmapped Areas

Development purposes:

EGLE Floodplain Engineers can provide estimates of flood elevations on streams when floodplain maps do not exist, or there is no flood elevation printed.

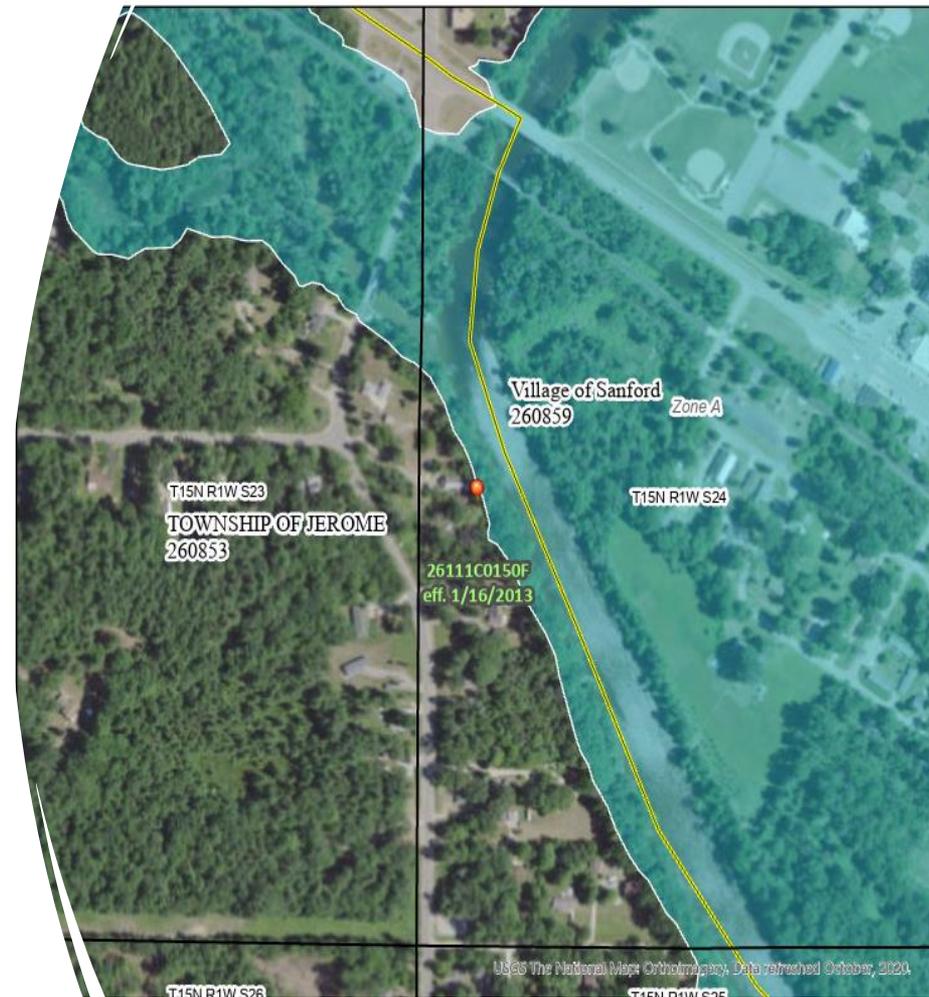
Submit **Floodplain Elevation Calculation Request** & site location map in MiEnviro

[Floodplain Management/National Flood Insurance \(michigan.gov\)](http://www.michigan.gov)

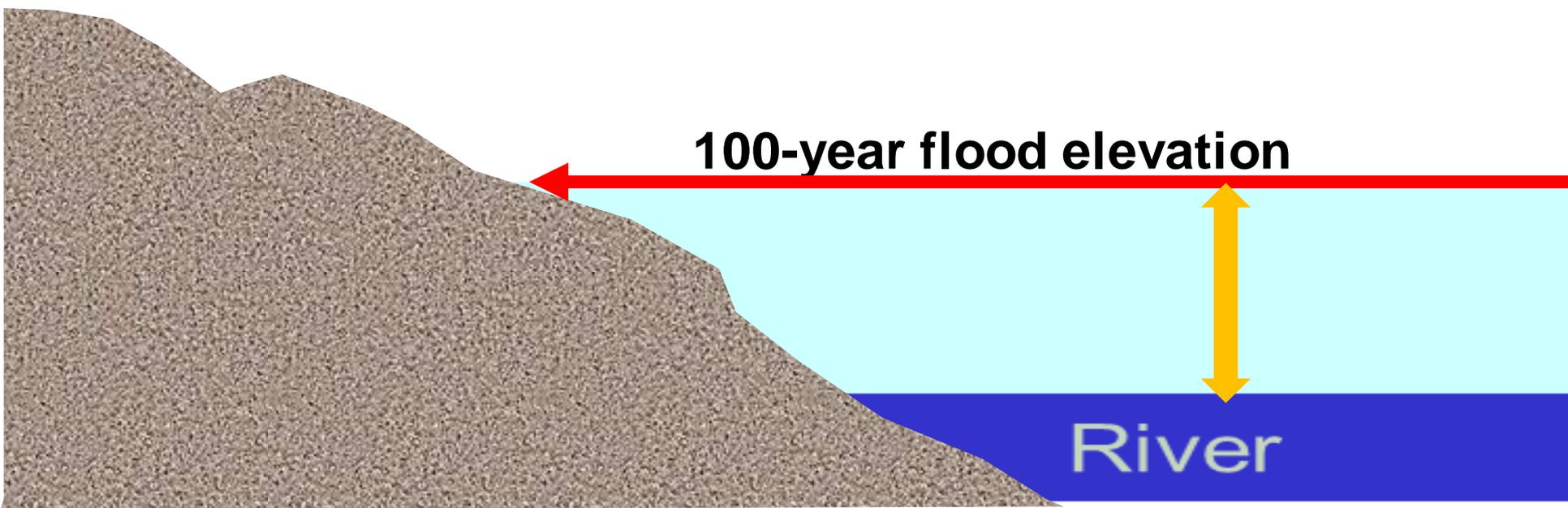
Insurance determinations: contact the FEMA mapping center at 877-336-2627, www.floodsmart.gov

****Both are Free Services**

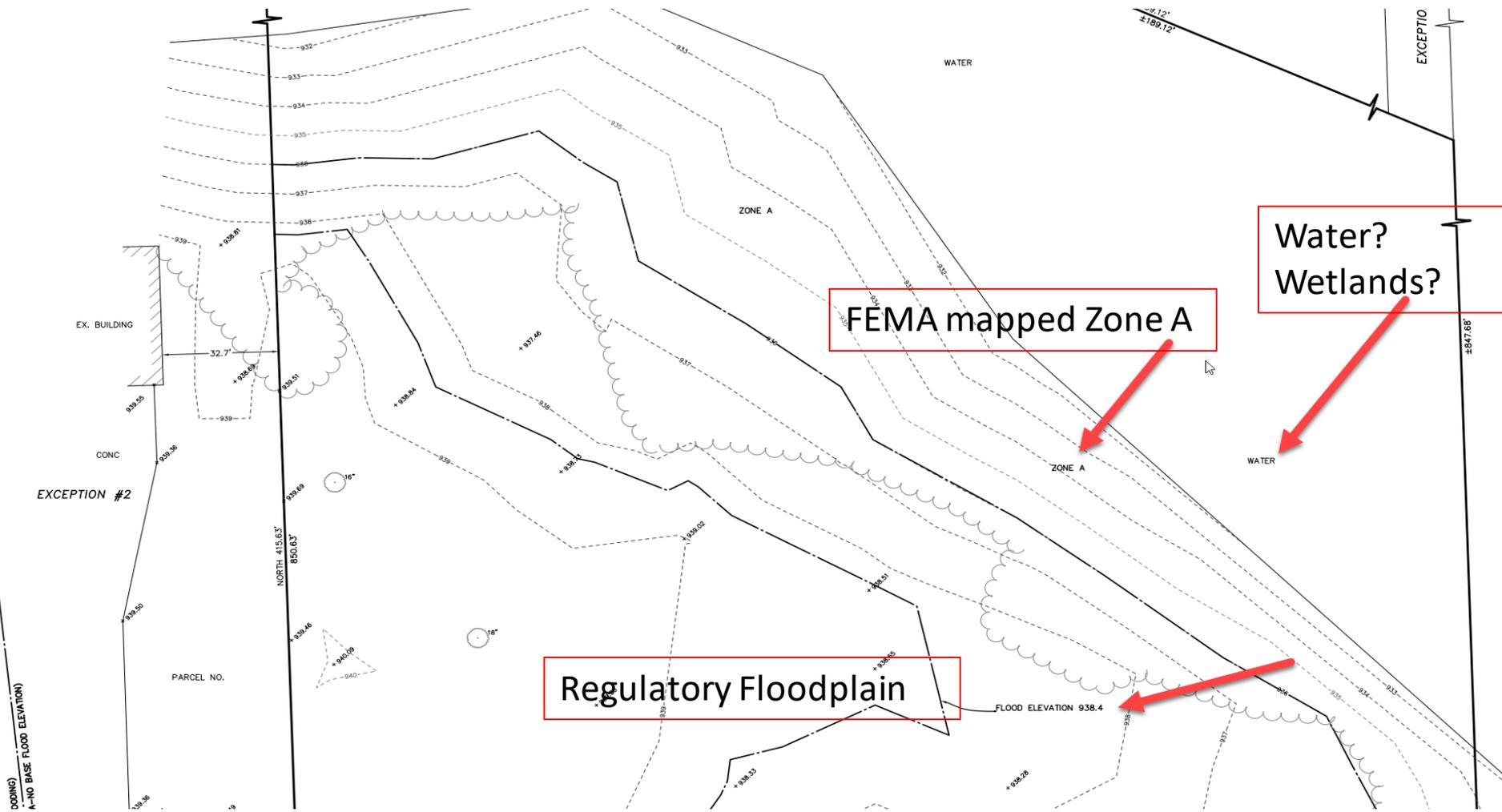
Flood Hazard Layer FIRMette



The ultimate determination of whether or not a site is within the 100-year floodplain is **Elevation**



If it is not completely obvious, get a **survey!** Michigan Building Code [A] 107.2.5 and R104.10.1



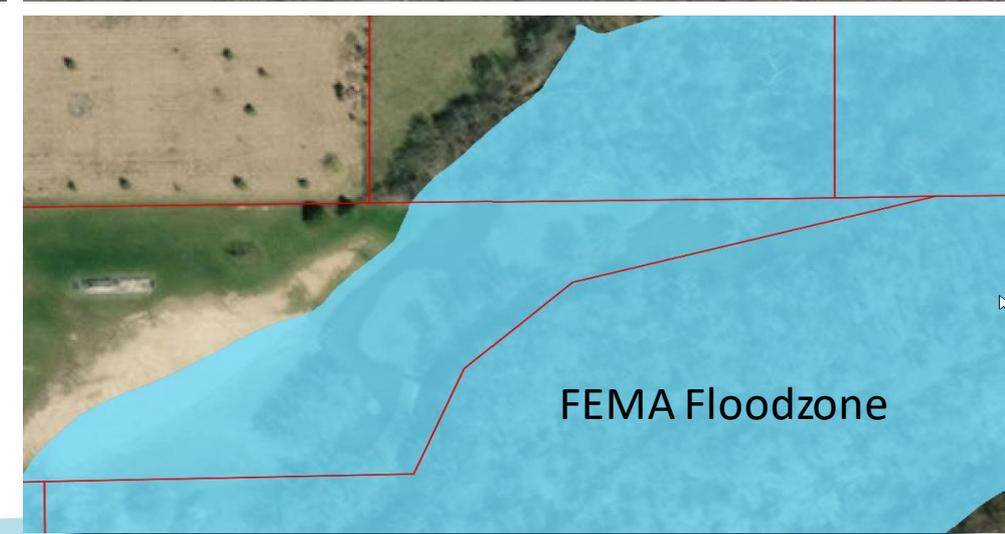
1. Obtain regulatory flood elevation.
2. Collect professional survey data-know the areas below flood elevation vs FEMA mapped floodzone (may differ).
3. Require necessary permits from EGLE



FEMA offers GIS shape files of floodzones to help identify floodplains.

Many communities use this in BS&A software, or community GIS.

Note! **Survey, or topographic data** is the ultimate determination regarding floodplain!



Floodplain Regulations

National Flood Insurance Program (NFIP),
Federal Emergency Management Agency
(FEMA)

State: Part 31 of Public Act 451

Local: Michigan Building Codes &
Ordinances



National Flood Insurance Program (NFIP)



FEMA

Communities choose to participate

Flood Insurance is Available in the community- anywhere!

Flood Insurance is required for a federally backed loan within the 100-year floodplain.

Elevation Certificates required for new construction, substantial improvements in or near the floodplain

****Typically the Building Officials Responsibility!****



NFIP Requirements

State of MI requirements are more restrictive than NFIP

As long as your community is doing the following, the community is meeting and exceeding the NFIP standards:

- enforcing the State building Code, including appendix G
- Requiring Elevation Certificates (as required by the building codes)
- requiring an **EGLE** permit prior to development in or near the floodplain.



FEMA



Find MI Communities at:

www.fema.gov/cis/MI.pdf

About 1000 NFIP communities in MI.

Who does what?

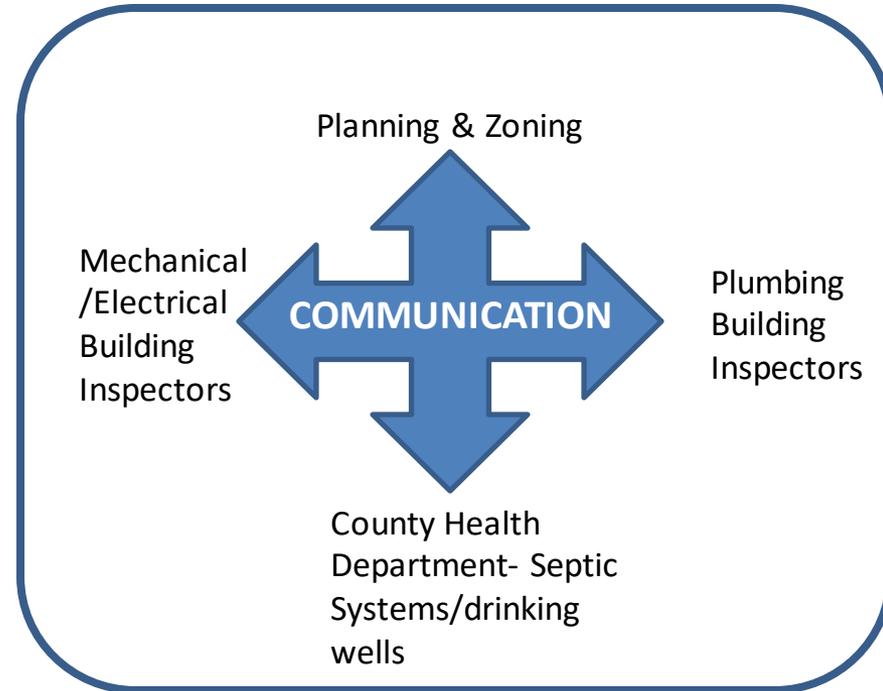
Refer to Local Ordinance:

Who within your community checks for floodplains? Wetlands?

Does your community have floodplains listed on a proposed development application checklist? BS&A software?

Who refers applicants to EGLE for state permits?

How are you communicating a floodplain project between departments, or within your own department?



Michigan's Part 31 Floodplain Program Goals

To protect people and property from flood damage

To reduce future flood losses in Michigan

Preserve the natural functions of rivers and their floodplains

EGLE
MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
WATER RESOURCES DIVISION
PERMIT

Issued To:
Michael Douglas
9500 Swan Creek Road
Saginaw, MI 48609

Permit No.: WRP021143 v.1
Submission No.: HP3-MICT-9TTTYR
Site Name: 9500 Swan Creek
Issued: December 9, 2020
Revised:
Expires: December 9, 2025

This permit is being issued by the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Water Resources Division, under the provisions of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); specifically:

<input type="checkbox"/> Part 301, Inland Lakes and Streams	<input type="checkbox"/> Part 323, Shorelands Protection and Management
<input type="checkbox"/> Part 303, Wetlands Protection	<input type="checkbox"/> Part 325, Great Lakes Submerged Lands
<input type="checkbox"/> Part 315, Dam Safety	<input type="checkbox"/> Part 353, Sand Dunes Protection and Management
<input checked="" type="checkbox"/> Part 31, Water Resources Protection (Floodplain Regulatory Authority)	

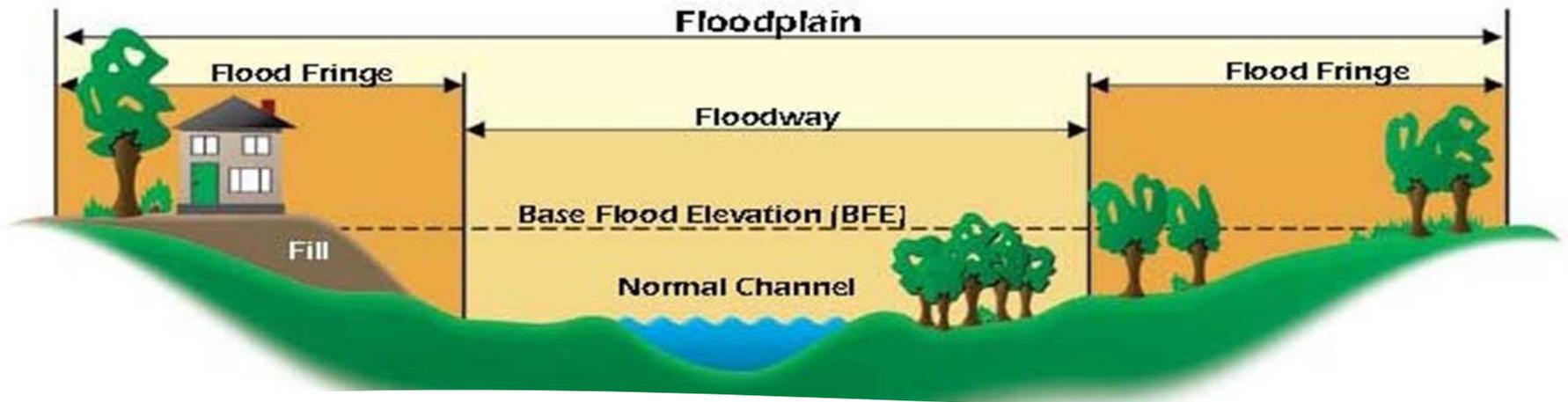
Permission is hereby granted, based on permittee assurance of adherence to State of Michigan requirements and permit conditions, to:

Authorized Activity:
Construct a 24 by 34 feet residential addition on existing detached garage and within the 100-year floodplain of the Shiawassee River. The addition shall be constructed on crawlspace and designed to flood with venting in accordance with the Michigan Residential Building Code and FEMA Technical Bulletin 11-01 (see Code for details). As a reminder, based on Substantial Improvement criteria within the Michigan Residential Building Code the existing garage will likely need to meet current state Building Code criteria. Place approximately 300 cubic yards of fill material to construct an elevated detached pole barn measuring 50 feet by 30 feet above the 100-year flood elevation. Fill to install a new driveway.

Waterbody Affected: Shiawassee River
Property Location: Saginaw County, James Township, Section 5, T11N R4E,
Property Tax No. 16-11-4-05-2576-000

Under the state's Floodplain Regulatory Authority found in Part 31, Water Resources Protection, of NREPA, as amended, a permit is required for:

- Any Occupation,
- Construction,
- Filling, or grade changes within the floodplain of a river or stream that has a drainage area of **2 square miles, or greater**



There is a one-time cut for fill exemption for volumes less than 300 cubic yards

Compensating cuts are required for floodplain fill at a 1:1 ratio minimum if this volume is exceeded

Cut for Fill- Part 31 Minor Project

Cuts should be provided on site at approximately the same elevations as the filled areas

-or-

A watershed hydrologic analysis that shows no adverse affects to stage and discharge characteristic of the watercourse

Joint Permit Application (\$100)

www.Michigan.gov/jointpermit

Floodway Development



Floodway

An engineering analysis is required
for fill and other obstructions
within the floodway

**Residential construction, including structural additions, is PROHIBITED
within the Floodway under Part 31**

State Construction Code

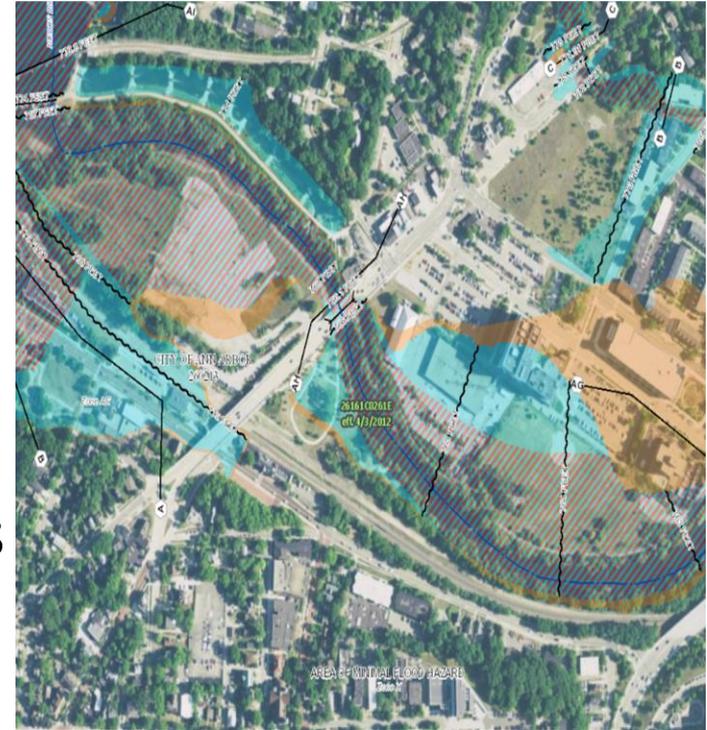
Where do the floodplain provisions of the building codes apply?

Mi Residential Building Code Table 301.2.1,
Michigan Building Code 1612.3:

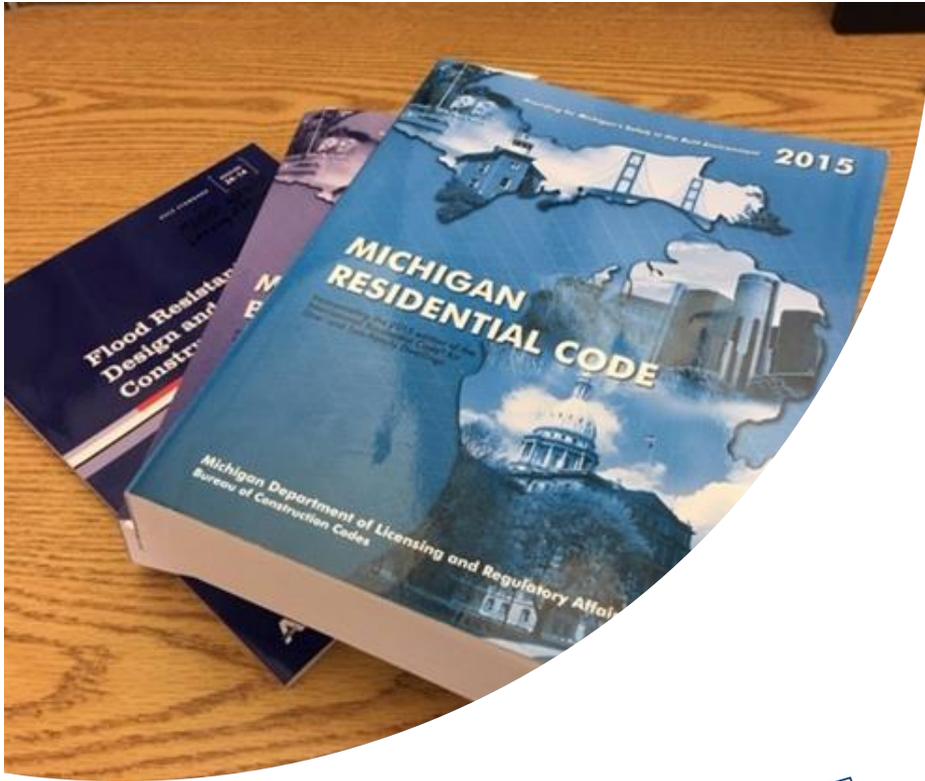
If there is a FEMA NFIP map, it applies to the shaded 100-year floodplain.

-Or-

If there is no FEMA map, it applies to the state regulated floodplains under Part 31.



State Construction Code- Appendix G

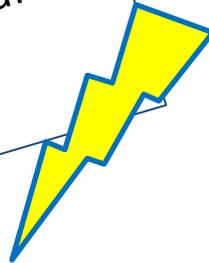


Communities that participate in the NFIP adopted Appendix G by ordinance.

Appendix G contains many floodplain requirements necessary to participate in the NFIP.

- Septic systems **G401.3, ASCE 24**
- Agricultural Buildings **G1001.1-G1001.3**
- Recreational Vehicles **G601.1**
- Alterations in Coastal Areas **G103.7, ASCE ch 4**

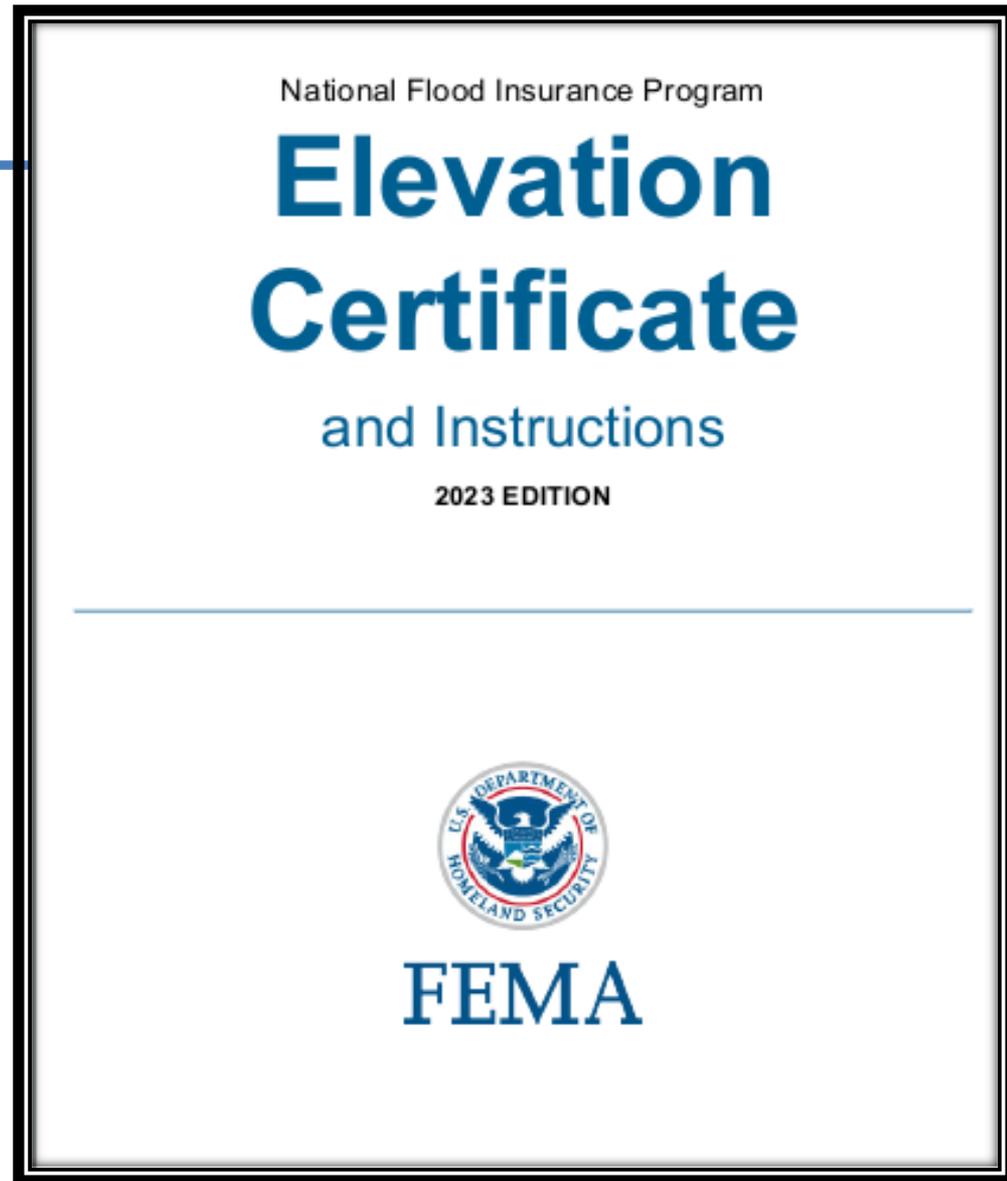
Who communicates that a site is in a floodplain to County Health Dept, or County Drain Commissioner?



Elevation Certificate (EC)

Section R109.1.3 - An Elevation Certificate must be submitted to the building official upon placement of lowest floor (including basement), prior to vertical construction. (**MBC 110.3.3**)

Note: Elevation data must be REVIEWED in accordance with codes.



EGLE Webinar on Michigan Building Codes

Floodplains 101: What you need to know about the floodplains in your community, recorded January 11, 2022, Local Leaders Webinar Series:

https://www.michigan.gov/egle/0,9429,7-135-3308_3333-487948--,00.html

Detailed information on the building codes regarding foundation design requirements and examples of how to review surveys and ECs.

Also, a **Substantial Damage & Coastal Floodplain** webinar



The Michigan Department of Environment, Great Lakes, and Energy (EGLE) presents this webinar series dedicated to helping Michigan's local officials and community leaders gain a better understanding of EGLE and the environmental regulations that affect their communities. Each month, EGLE will host a 1-hour webinar that will tackle a topic of interest to local officials and community leaders throughout the state. Each webinar will include a presentation by EGLE staff and time for questions from attendees.

UPCOMING WEBINARS

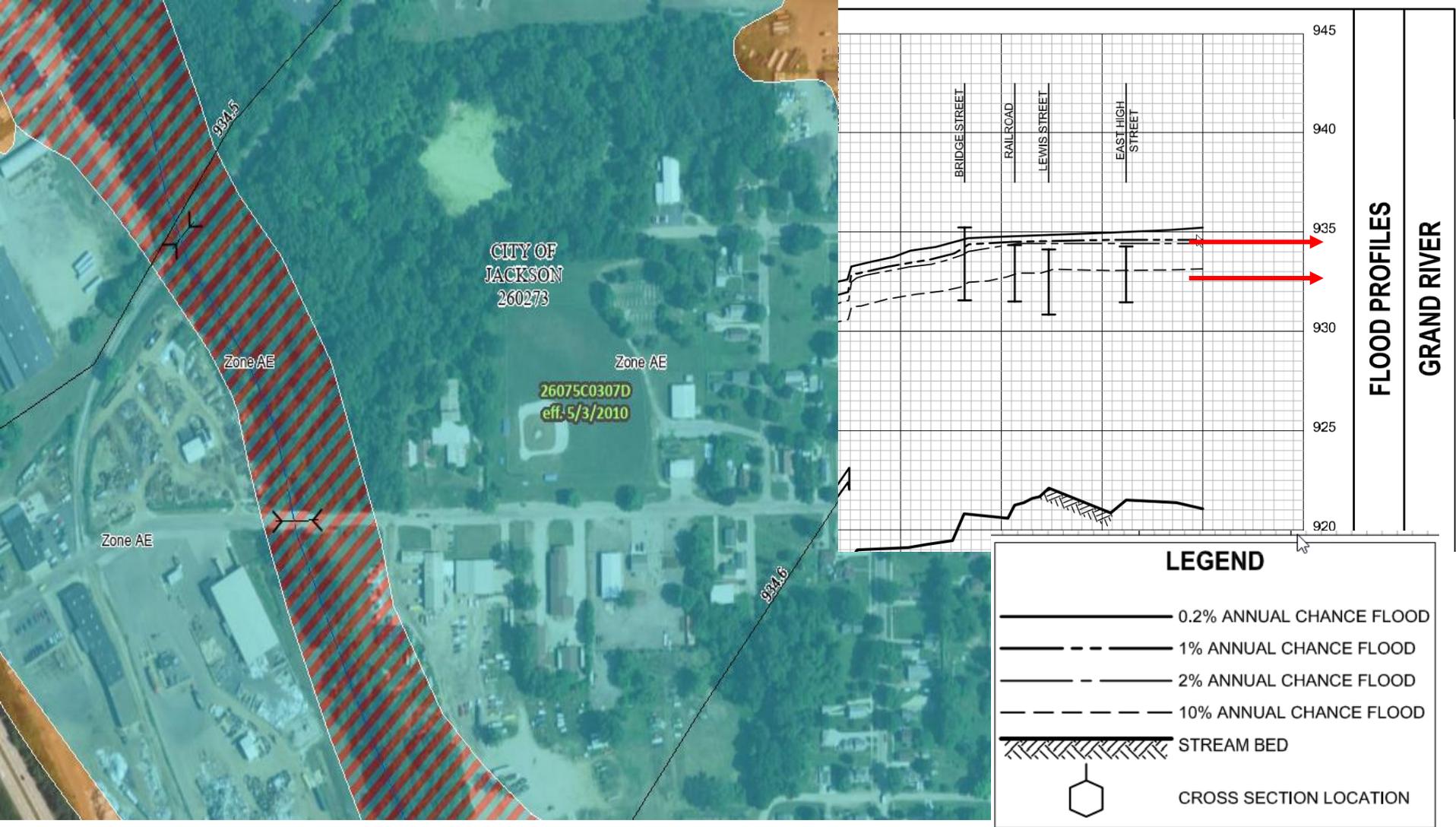
Additional webinars coming soon.

RECORDED WEBINARS FROM THIS SERIES

Floodplains 101: What you need to know about the floodplains in your community (recorded 1/11/22, 90 min)

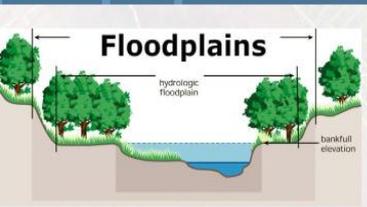
Is there a waterbody that runs through, or near your community? In Michigan, more than 1,000 communities participate in the FEMA National Flood Insurance Program (NFIP) and an even greater number have unmapped flood zones, yet every waterbody has the potential to flood. This webinar is an opportunity to learn about floodplain management, the flood provisions in Michigan Building Codes, and EGLE's Floodplain Authority found in state regulations. We will discuss what a floodplain is, what activities require a permit, floodplain development administrative responsibilities, and reviewing an Elevation Certificate. The presentation is intended for anyone involved in development within your community such as supervisors, clerks, building officials and inspectors, engineers, and surveyors. Building Officials and Inspectors, and others who qualify can earn 1 hour Administrative credit toward Act 54 hours (LARA course Floodplain 101, CP-20-00061).





Use FEMA maps and FIS to gain perspective:
 1% annual chance flood elevation= 934.6 feet NAVD-88
 10% annual chance = 933 NAVD-88

- WETLANDS
- SOILS
- GROUNDWATER RECHARGE
- HYDRIC SOILS
- PRODUCTIVE AGRICULTURE
- SURFACE GEOLOGY
- TOPOGRAPHY
- FLOODPLAINS**
- LAND USE

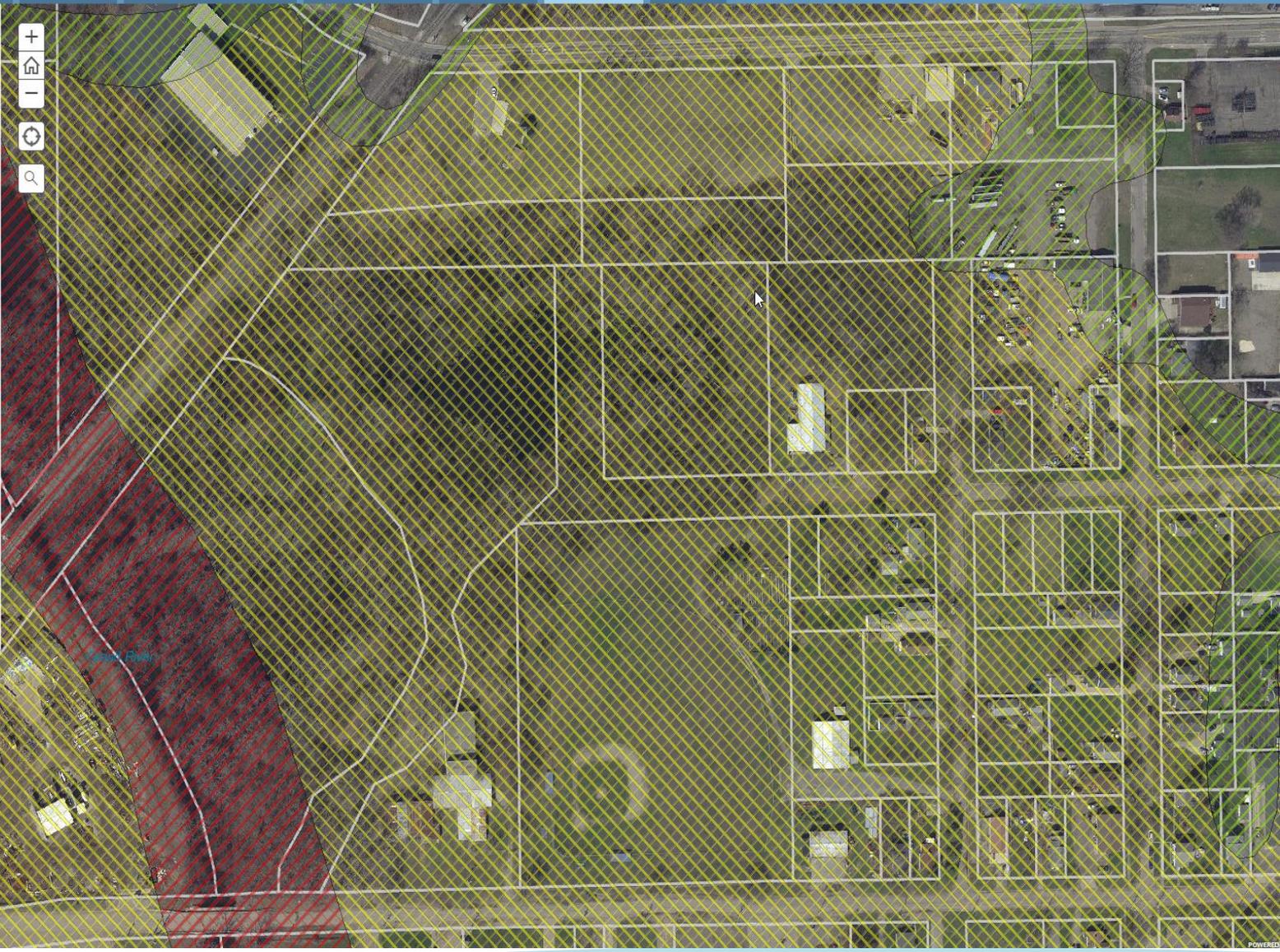


-  Floodway
-  100 Year (1.0% Annual Chance)
-  500 Year (0.2% Annual Chance)

Floodplains are areas adjacent to streams or bodies of water that are prone to an overflow of water under certain conditions. The Floodplains seen here were created by the Federal Emergency Management Agency (FEMA) in 2010.

Areas seen in Yellow on the map represent land that FEMA believes could be flooded once every 100 years (a 1% annual chance) and Green areas as once every 500 years (a 0.2% annual chance). If your property falls in a Flood Zone but you are unsure of the chances it will actually be flooded it is recommended that you consult with a Surveyor that specializes in Flood Zone determination.

More information on Floodplains and Flood Insurance can be found on [FEMA's website](#). Michigan specific Flood information can be found on [Michigan Dept. of Environment, Great Lakes, & Energy webpage](#).

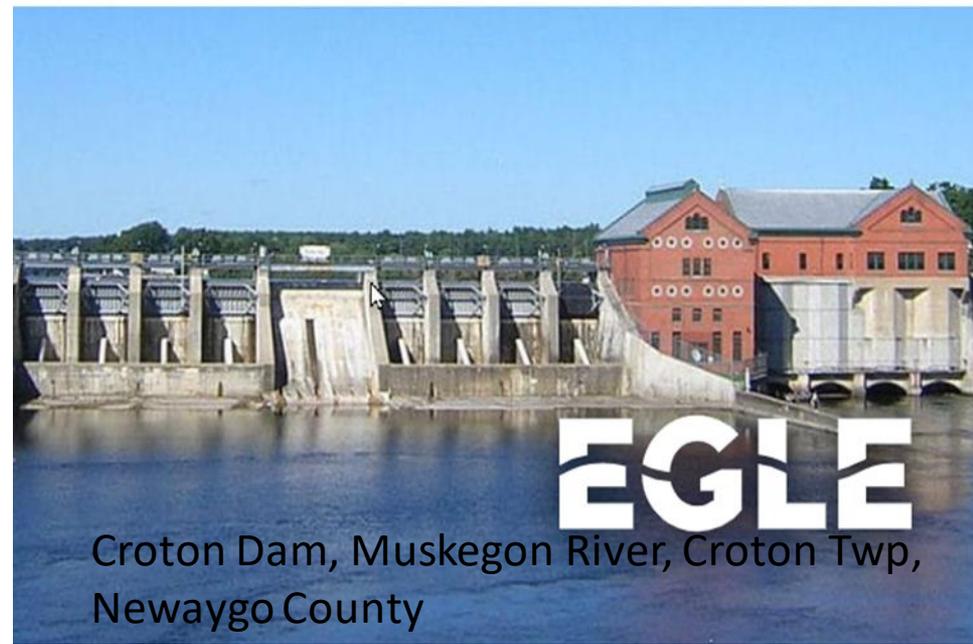




Ability to identify areas at higher risk, or likely to experience frequent flooding.
Identify areas that may be above the 100-year floodplain.

- Received 64 pre-proposals this year for a cumulative ask amount of over \$68 Million.
- Projects are reviewed and ranked based on level of risk reduced, or eliminated
- Awarded 22 grants for a total of \$14.1M for 2023/2024 grant cycle to reduce risk and protect residents.

Another \$14.1M allocated for next year- watch for announcements Fall 2024!



Dam Safety Unit Dam Risk Reduction Grant Program

www.Michigan.gov/damsafety

FEMA Hazard Mitigation Assistance (HMA)

- Funding to help communities mitigate risk from natural hazards, including flooding
- Administered by MSP
- Four grant programs and one low-interest loan program
- Most grants require 25% match- can also be 10% or 0% depending on the situation and program
- Loans have a max interest rate of 1%
- **Communities must have a FEMA approved local hazard mitigation plan**
- **Some programs and/or project location will require the community to participate in the NFIP**



[Hazard Mitigation Assistance \(michigan.gov\)](https://www.michigan.gov)

Next Funding Opportunities:

Swift Current

- \$20 Million available to mitigate flood losses at properties on FEMA's Repetitive Loss lists
- Application information coming out soon
- Applications due September 1, 2024
- MSP will be reaching out to eligible communities

Hazard Mitigation Grant Program (HMGP) for Disaster 4757

- Current funding estimate is \$16 million (that may go up)
- Available statewide (preference for projects in the 9 declared counties; Eaton, Ingham, Ionia, Kent, Livingston, Macomb, Monroe, Oakland, and Wayne.)
- Application information coming out by mid-June

Application information will be available soon:

<https://www.michigan.gov/msp/divisions/emhsd>

Email:

MSP-EMHSD-Hazard-Mitigation-Grants@michigan.gov

FEMA Hazard Mitigation Assistance (HMA)



[Hazard Mitigation Assistance \(michigan.gov\)](https://www.michigan.gov/emhsd)

Michigan Department of
Environment, Great Lakes, and Energy
800-662-9278, [Michigan.gov/egle](https://www.Michigan.gov/egle)

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EGLE Floodplain Management: www.Michigan.gov/floodplainmanagement

EGLE Wetlands: www.Michigan.gov/wetlands

Joint Permit Application : [Michigan.gov/jointpermit](https://www.Michigan.gov/jointpermit)

FEMA Floodmaps online: [msc.fema.gov](https://www.msc.fema.gov) or [fema.maps.arcgis.com](https://www.fema.maps.arcgis.com)

Wetlands Map Viewer: <https://www.mcgi.state.mi.us/wetlands/>

Hazard Mitigation Assistance Grant Program, State Police:
[Hazard Mitigation Assistance \(michigan.gov\)](https://www.Michigan.gov/hazardmitigation)

FEMA Flood Smart- Insurance Information: www.Floodsmart.gov